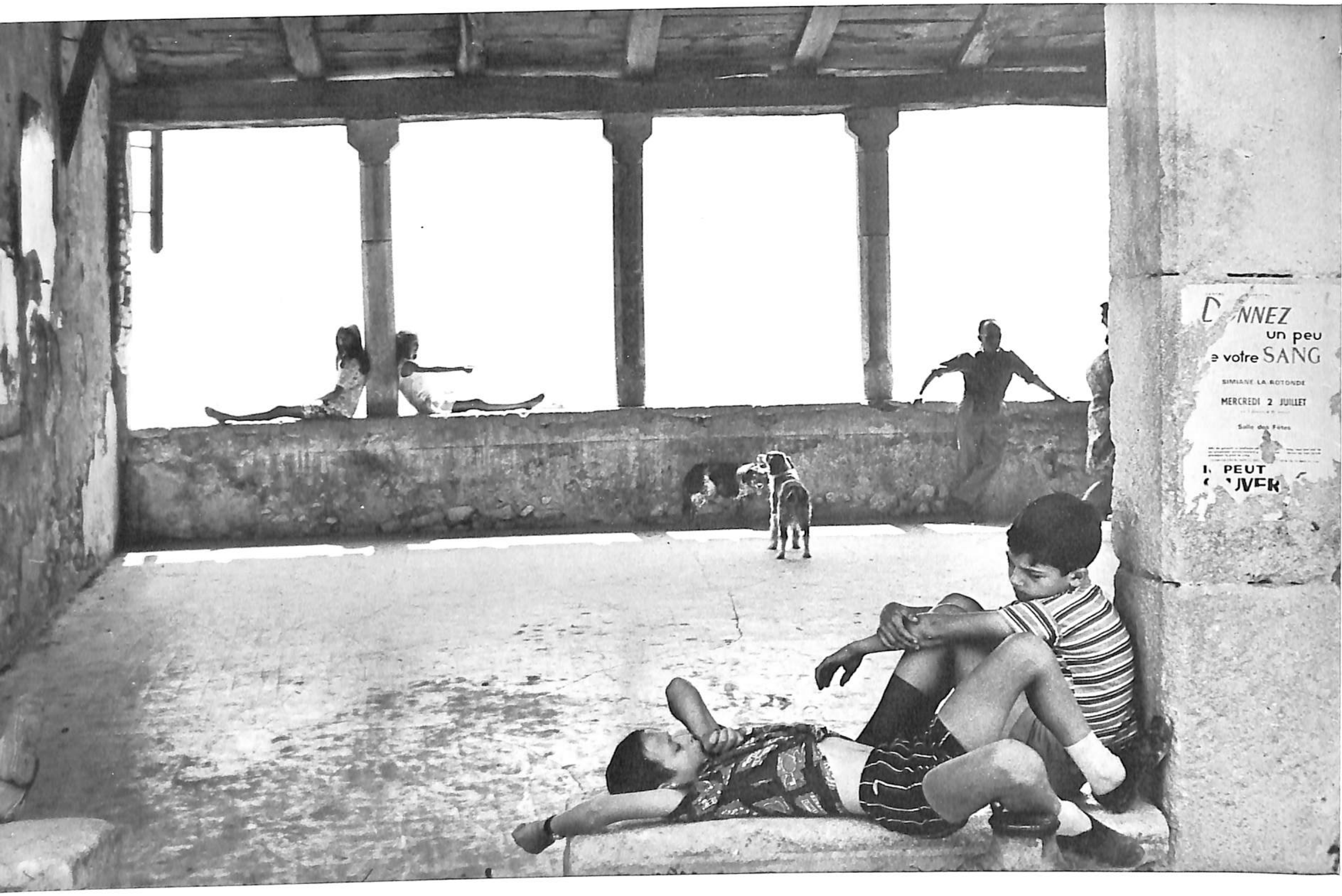
LEICA PHOTOGRAPHY



Henri Cartier-Bresson
Simiane in the Haute Provence.
From a new book,
Cartier-Bresson's France (Viking Press)
and an exhibition now being circulated
in this country.
Photographed with a Leica M3.

COVER
Bernard "Lefty" Kreh
Osprey in flight at Flamingo in
Everglades National Park
where they are seen quite frequently.
The photographer used a Leicaflex SL
and 400 f/6.8 Telyt-R.

LEICA PHOTOGRAPHY

Volume 24 **Number 1** **1971**

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The editors are happy to consider original articles on photography with the Leica and photographs taken with Leica cameras and lenses. All manuscripts and photographs should be accompanied by stamped, self-addressed return labels.

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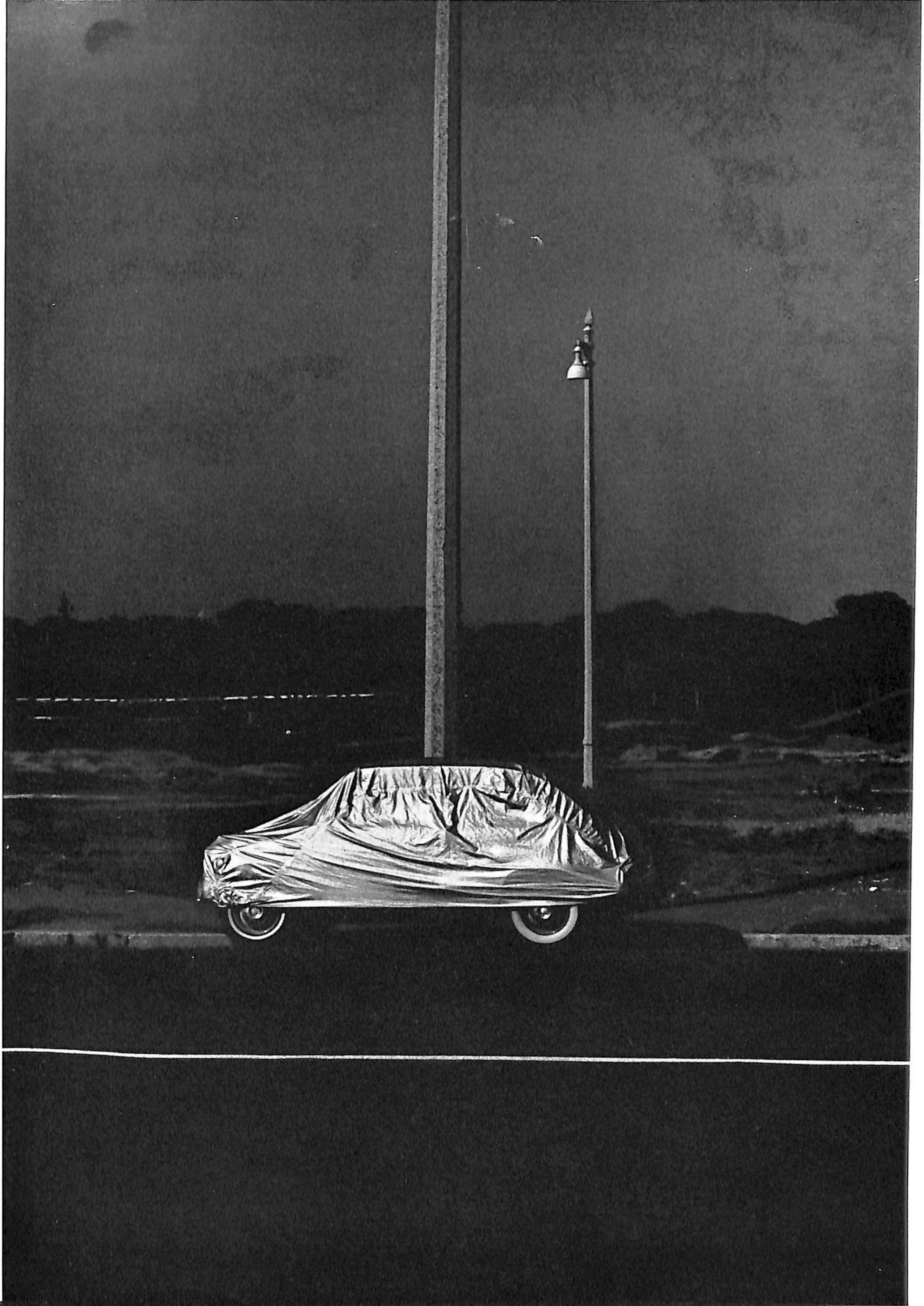
SHOWPLACE

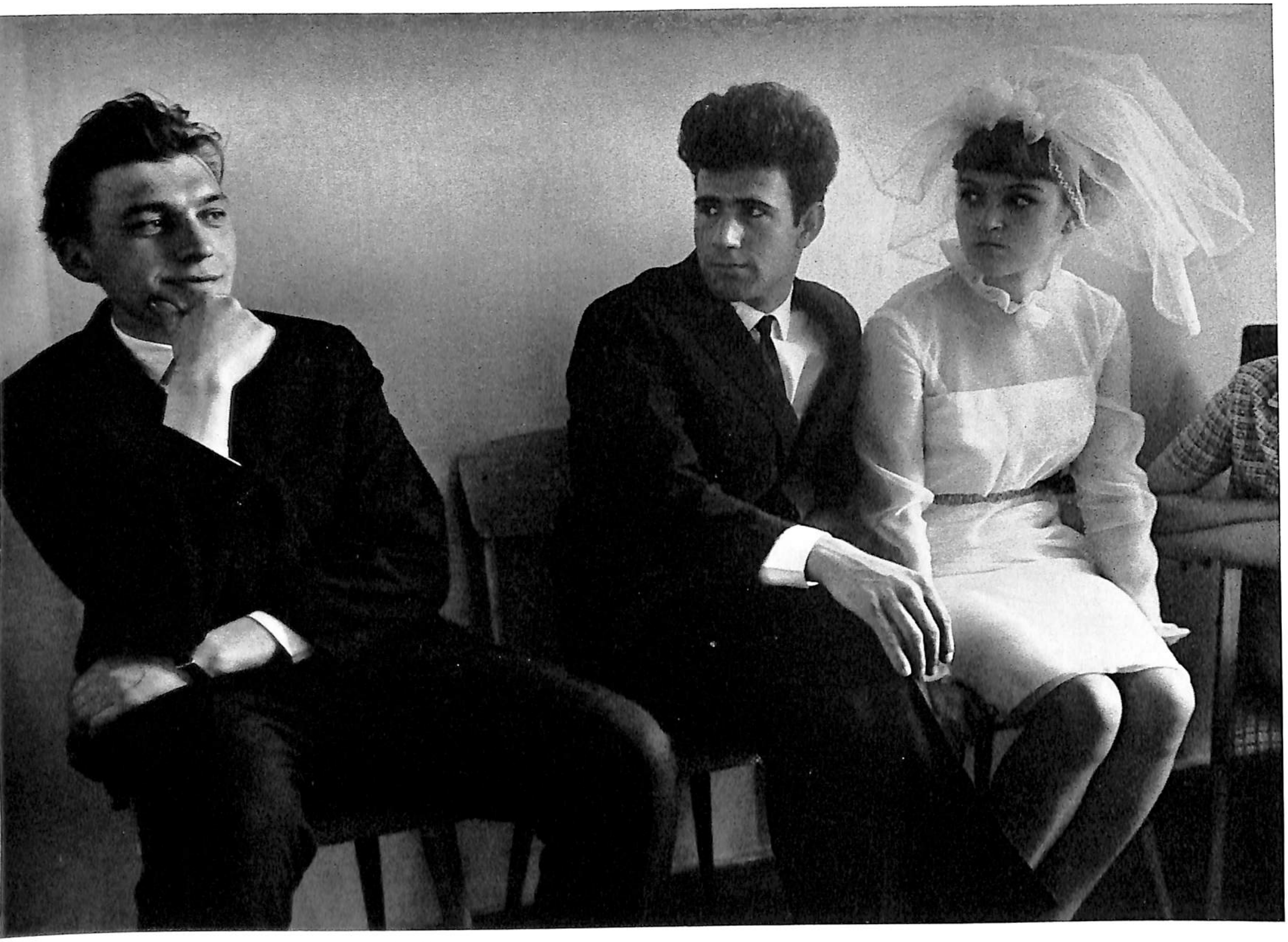
Elliott Erwitt

Long acclaimed for his proficiency with a camera, Elliott Erwitt has done work that is well known in both the editorial and advertising fields. But the photographs on these pages fall into a different kind of category. Taken while on or in-between assignments, all over the world or simply walking around the block, they are the photographer's very personal, deft and

Near Rome ▶

Brighton (England)





Marriage Bureau in Bratsk, Siberia

immediate response to the gentle absurdities all around him.

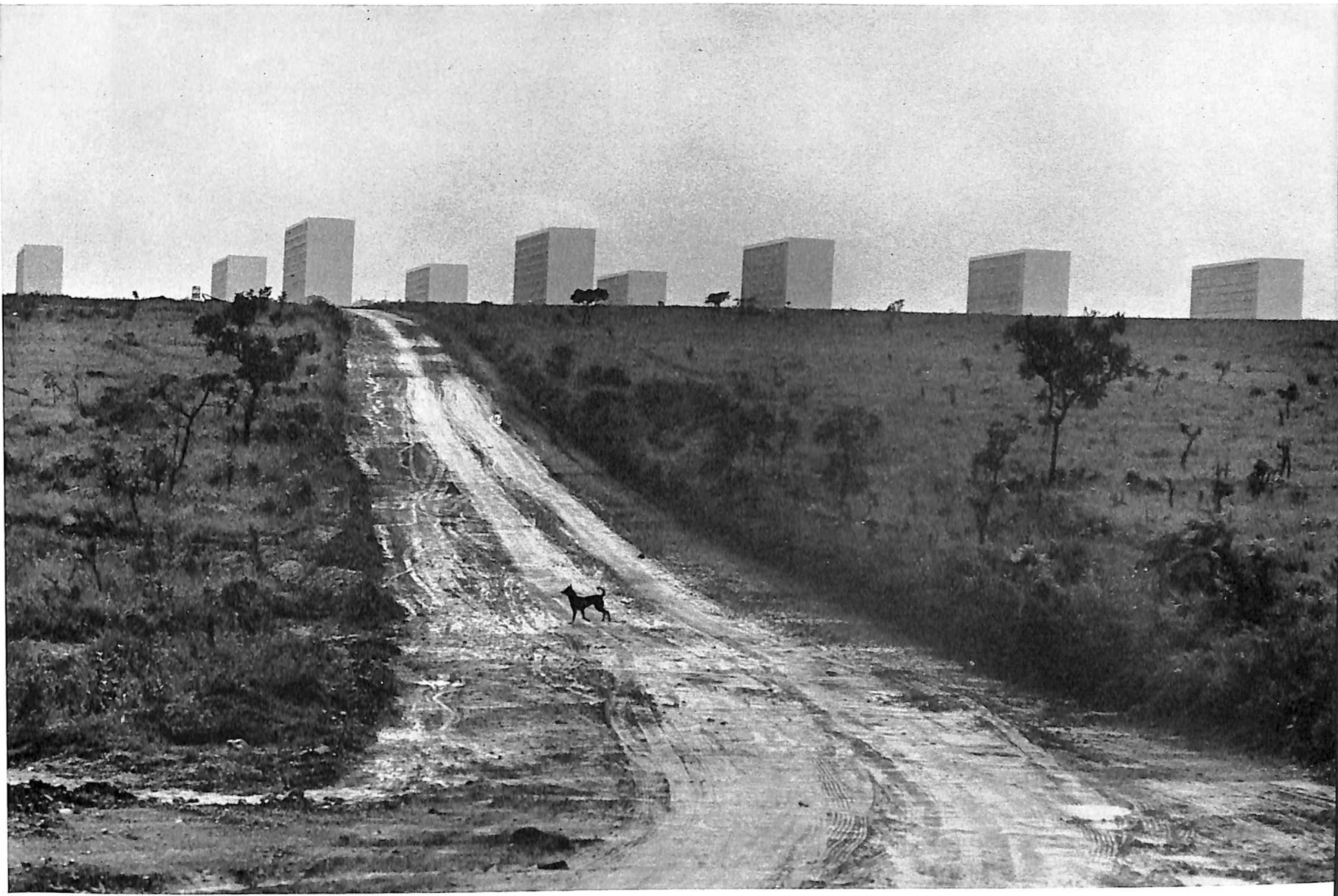
The quite improbable becomes perfectly plausible. There is an inevitability in these unexpected juxtapositions. These isolated forms, these figures seemingly overwhelmed by circumstances in an imperturbable environment acquire a wry, Quixote-like urgency, and retain a dignity even at their most absurd. Their predicament is universal, and a precise and discerning wit reveals the humor in man's frailty.

The photographs are in Erwitt's exhibition

Hungary

Honfleur (France)

CORDON



Brasilia

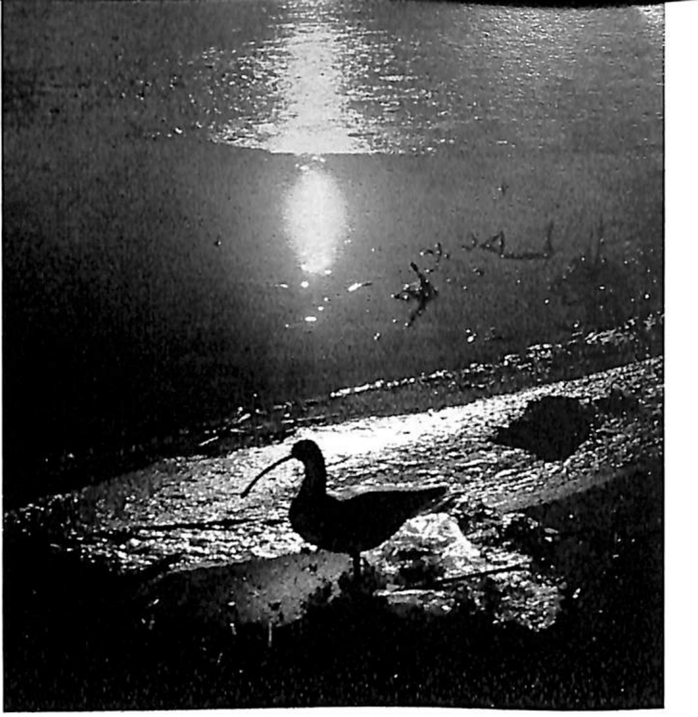
◀ Washington, D.C.

"Photographs and Anti-Photographs," most recently seen at the Smithsonian Institution. He is currently making the prints for an exhibition opening in London this summer.

Erwitt was born in Paris of Russian parents and grew up in Italy. When not off on one of his frequent travels he lives in New York. He is a past president of Magnum, the photographers' agency.

Erwitt uses Leica M cameras for his journalistic work and Leicaflex SL's for his advertising assignments. The photographs on these pages were taken with Leica M cameras.

Stop Closeup Pain Fast!



Harvey Weber

Put the 65mm Elmar on the Leicaflex SL

Can a modest, medium-speed macro lens from the Visoflex system find lasting happiness wedded to the glamorous, sophisticated Leicaflex SL? Certainly! By taking the best of the two different systems, a unique, versatile combination is created that enables you to take pictures with complete exposure accuracy from infinity down to 13 inches.

No added extension tubes, supplemental lenses or other bothersome equipment are needed. Just focus by means of an extremely brilliant prismatic viewfinder, stop down, match an "eye" and a needle, squeeze the release, and you have perfect exposure for normal views and extreme closeups alike.

Leicaflex SL owners have been ignoring an attractively versatile combination in the matching up of the 65mm Elmar f/3.5 lens (Cat. No. 11,062) and the SL metering system. True, the lens must be manually adjusted for exposure and the Leicaflex SL doesn't look quite as svelte wearing the 65mm Elmar as it usually does. But wait until you see the results!

The potential of the 65mm Elmar lens has been widely neglected by Leica owners except for the *aficionados*. Because it is not a fast, "glamorous" lens, neither a normal nor a telephoto, many photographers have overlooked its unique qualities. It is a true macro lens, focusing from infinity to 13 inches—the only Leica lens to do so.

This allows you to take pictures from infinity to an extreme closeup with a ratio of reproduction of 1 to 2.4 with the normal focusing equipment. And let's face it; most of us do not carry around extension tubes, supplemental lenses, bellows, and adapters and without them you cannot use other Leica lenses for close work.

The 65mm Elmar f/3.5 stops down to f/22 in half-stop steps in a click diaphragm, weighs only 4½ ounces by itself and will photograph an area 2¼" x 3⁷⁄₁₆", or a 1:2.4 ratio when fully extended. Designed for the Visoflex system, it is used with the Universal Focusing Mount (Cat. No. 16,464), a sort of solid-state bellows.

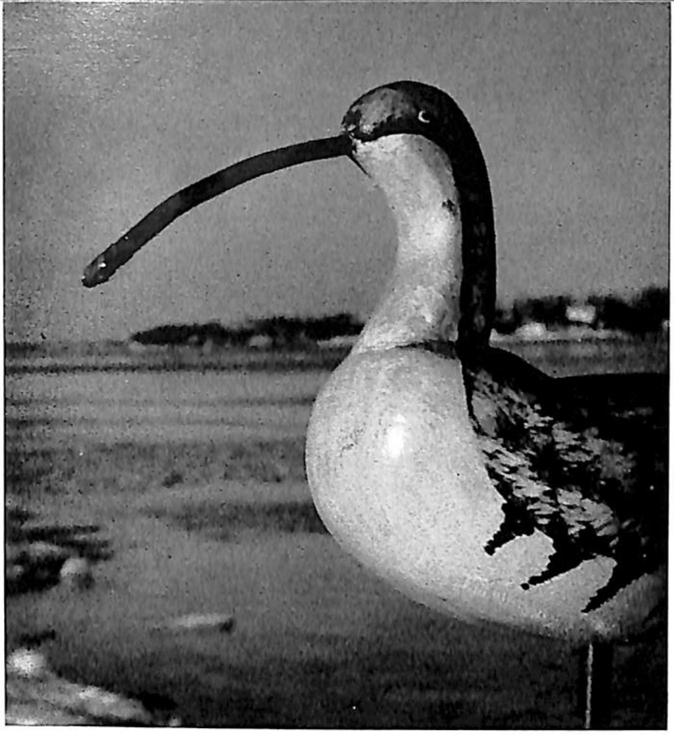
With the Visoflex system, exact exposure for closeups is a problem that the photographer must solve by using detailed charts, exact extension measurements, equations, or other statistics. So, what makes more sense for closeup work than to place your lens in front of an easy-to-use, extremely accurate metering system—the externally-coupled CdS meter of the Leicaflex? The SL's through-the-lens metering system accurately measures the actual light available to the film, and automatically considers lens extension, effective aperture and the other factors that would otherwise require exposure computation. The mechanics are simple: just match up an "eye" and needle in the viewfinder to set the exposure correctly.

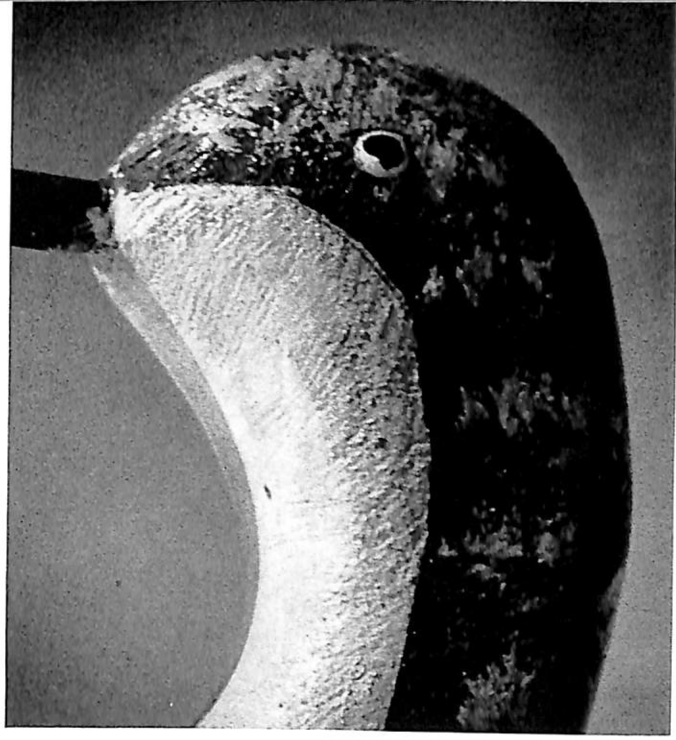
Using the lens diaphragm to alter the needle, or the speed knob to control the eye, the two are brought together producing the precise correct exposure — although for closeups, a small aperture around f/11 or less is usually needed to provide a useful depth of field. Shutter speed is set accordingly.

As a lens is racked forward for a closeup, the amount of light reaching the film at the marked f/stop changes. Light varies inversely with the square of the distance from its source, so as the distance between the lens and film is increased there is less light per unit of film area available to make an exposure. In this case, the lens diaphragm is acting as the source of light.

The metering system now does all the computing and all that is necessary to do is to match the eye and the needle, squeeze the release and hit the exact exposure every time. The 65mm Elmar, when used at a 1:2.4 ratio of minification (minification is when the negative size is smaller than the area photographed), results in one full stop difference in exposure compared to using the lens at the same f/stop at infinity.

A quick, interesting experiment to illustrate this on your Leicaflex SL is to focus at infinity, match up the needle





and the eye; at the same diaphragm opening, slowly rack out the lens and watch the needle and eye separate. Then, by halving the shutter speed, or opening up the diaphragm one full stop to allow twice as much light in, you will bring the needle and eye together again.

The 65mm Elmar is an ideal lens for any photographer. It is a moderately fast f/3.5, with excellent optics and resolution. The focal length gives a slightly larger image than the "normal" 50mm lens that is a useful bridge between the 50mm and 90mm.

The nature photographer can find this an easy-to-carry, one-lens outfit, since he can photograph a flock of birds in flight one minute and follow with a closeup of an egg the next. And with no fumbling or lost time the transition from a view of an entire beach to a small shell is almost instantaneous requiring only simple focusing.

Hand-held, extreme closeups are not hard to shoot after a little practice. This is a welcome capability, since a heavy tripod is often burdensome to cart on a field trip. By bracing on your knee or elbow, or using a rock or any other available natural prop, a relatively stable platform, easily steady enough for exposure of 1/30 of a second, can be formed. This can handle most of the ordinary exposures on slow or medium films. Using film with an exposure index of 160 for a closeup at 13 inches, the exposure is about 1/30 at f/22. Incidentally the f/22 stop on the lens is another plus factor because of the additional depth of field it offers, a great advantage when taking closeups.

Since the 65mm Elmar is basically designed for use on the Visoflex system, you must control the exposure by focusing wide open and then closing down the aperture manually. There are no distance markings on the lens mount, so groundglass focusing is necessary. Using a knee or elbow brace for shooting, this is not at all difficult to do even hand-held. For even more stability and accuracy, the small Leica table tripod (Cat. No. 14,100) with the large ball and socket tripod head (Cat. No. 14,121) makes an ideal lightweight pocket accessory for closeup work.

The manual stop-down procedure is really not extra work since you will normally want to focus wide open to check the depth of field. Focus, stop down the lens to the desired depth of field, match the needle and eye by adjusting shutter speed, squeeze the release—and perfect exposure will capture exactly what you see. What you see, is what you get. What could be simpler?

There are many who jestingly claim E. Leitz is in the plumbing business—so many tubes, adapters, rings, etc., are catalogued. It may seem like this—but it is all for everyone's advantage as it permits the multi-use of almost any lens, on any camera, in any system.

The 65mm Elmar is easily converted for use on the Leicaflex SL by the use of a lens adapter (Cat. No. 14,127) with a "star" (asterisk) following the number. (The "star" indicates that it will properly actuate the meter of the SL.) Previous Leicaflex adapters without the star can be modified for use with the SL model. The adapter acts as a spacer to bring the film plane-to-lens distance to the same spacing as that of the Visoflex II or III. Lens and universal focusing mount, are bayoneted to the adapter to provide an easy-working, versatile macro lens outfit.

Even more versatility is provided when you add an extension tube (Cat. No. 16,471) that fits between the universal focusing mount and the lens unit to allow shooting at a ratio of 1:1.2 covering an area of 1⅛ x 1¹¹⁄₁₆. This calls for an exposure increase of 3.4 times, but with the Leicaflex SL you no longer need calculations, charts, tables, tubes. You just match the needle and the eye, and expose. Want to use a filter any place in this system? No need to calculate; for most practical purposes, you just match up the needle and the eye, and expose.

For versatility, ease of operations, and complete accuracy, try this unique wedding of two systems. You will be delighted.

New Model Leitz Large Ball-and-Socket Tripod Head

Peter Moore

The tripod head that always stood figuratively head and shoulders above all its competition for 35mm work, now stands literally so (about ¾") above even its own predecessor. Yet, despite its greater height, the new model weighs in at *10 oz.*—½ ounce lighter—and should be even more rugged.

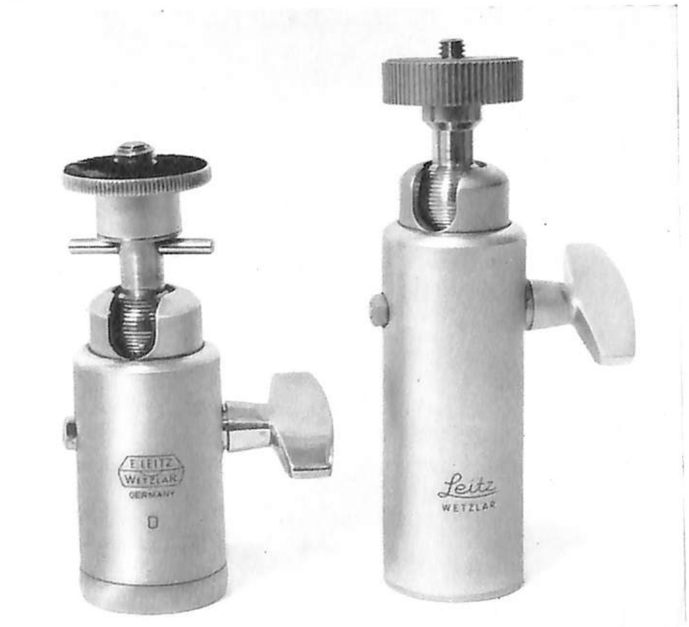
Since its introduction early in 1970, this head in its various models has graced almost every photojournalist's kit. Without a peer in strength, smoothness and convenience of use, this single control all-angle camera support has been used with everything—view and press cameras, 35's with 400mm lenses, even strobes. Everything has supported them from vise-grip pliers and C-clamps to the whole gamut of tripods from the sturdy little Leitz table tripod to giant movie tripods.

Among its unique additional features: it loosens *completely* so that it can be easily and rapidly screwed into or out of camera or lens tripod sockets allowing for the fastest changes of equipment in the field. It also has excellent proportionality, permitting it to be partially locked to support equipment weight and yet still be moved to allow framing adjustments or follow subject movements without the need to constantly lock and unlock it. The latter is a necessity in low light dance and theatre situations when following action with a tripod.

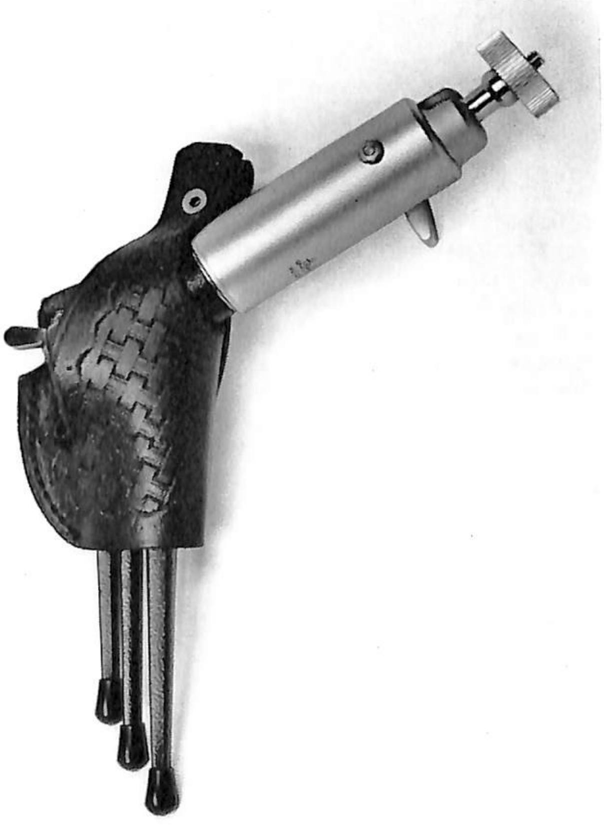
The small camera platform of the new ball-and-socket head also permits convenient use of close-coupled equipment. *M* Camera bodies can be loaded or interchanged when a lens or Visoflex is tripod-mounted without interference from the head. Additionally, it's one of the few single control all-position heads available in which the locking knob stays put with relation to the tripod, ending fumbling under pressure.

The new model differs from its predecessors in being higher, lighter, and simpler. Its greater height enables 'M' Leicas and earlier models with off-center tripod sockets to clear the long leg of the Leitz table tripod in two vertical positions, thus giving more flexibility of camera position-

New model large ball-and-socket tripod head compared with an original model now in its tenth year of service. Extra height makes for greater convenience and versatility.



Large ball-and-socket tripod head equipped table tripod in modified Police Special holster rides securely at hip ready for quick use.



ing, and more clearance in general.

The lightness of the new model needs little discussion. Simplicity was achieved by omitting the interchangeable European/American tripod fitting of its predecessor. At first this was a shock—I had a liking for the more robust European ⅜" fittings for heavy equipment. But upon reflection, I feel the simplicity of the new design fits American uses better and is immune to the wear and loosening possible with the interchangeable or dual purpose fittings of the earlier models under heavy professional usage and rough handling.

The T-handle used in camera mounting has been replaced by a much wider knurled collar which is easier to grip. Don't force the camera down too tightly, using the lens as a handle. The new top platform covering grips tighter than the old felt and you may have to go to extremes to get it loose. Moderate tightening is sufficient.

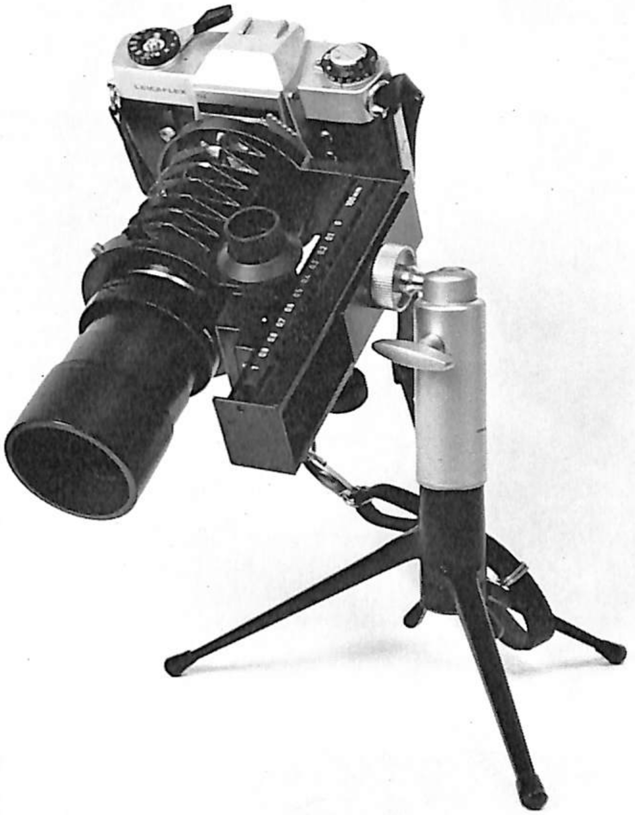
What can you mount on it? Personally I would (and do) use anything up to the weight and bulk of the 180mm Tele-Elmarit with Visoflex II and an *M* body without worry. A Leicaflex with any lens through the 280mm f/4.8 or 400mm f/6.8 Telyts or the Bellows-R with 100mm Macro-Elmar are also usable on it without question. However, I'll keep my view and press cameras on the larger heads that are made for them.

And what should you put it on? The Large Ball-and-Socket Tripod Head mates with any American thread (¼x20) tripod screw. An ideal mate is the Leitz Table-Top Tripod for use on tables, chairs, walls, floors, or even as a "chest-pod."

When looking for a regular tripod, your first requirement should be that it takes American (¼x20) threaded accessories. First preference would be a tripod without a head or with a removable one (most unscrew, but some are permanently fixed). Although it is possible to mount the ball head on top of an existing panhead, we see little point in carrying the extra weight of the latter. Rather than a lightweight (and automatically flimsy) elevator tripod, I use a plain but strong three-section tripod without a center column. It's stronger by far, lighter, and almost as fast to make gross height changes with as an elevator model. I leave the bottom leg sections fully extended and change height with the top sections. It's easy to reach them and it takes less time to loosen, pull out and retighten them than it does to describe it—maybe 20 seconds to go from 57 to 39 inches.

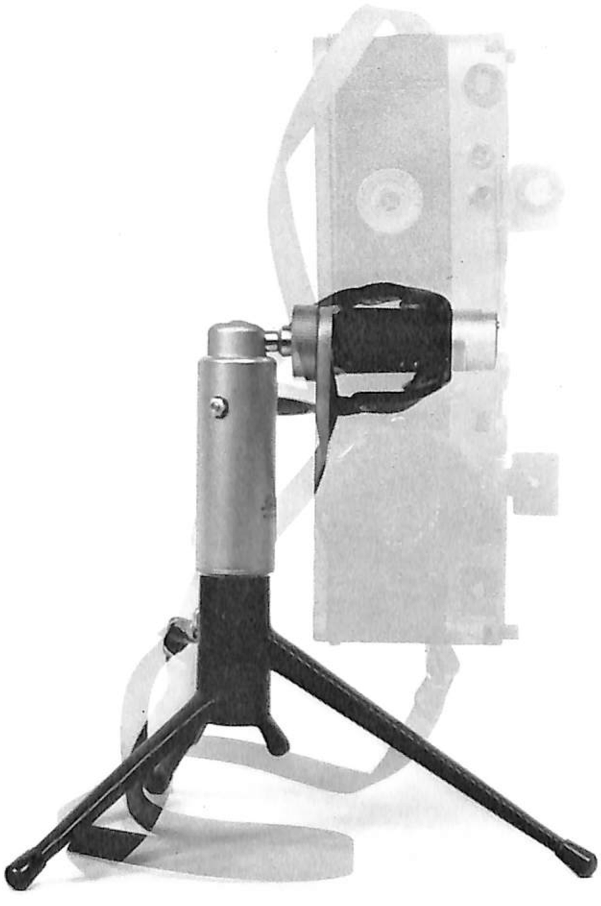
A tripod without a center column can be used seated without interference from the column. Only when minor but precise changes in height are needed do I go to an elevator tripod and pay the extra price in cost and weight of a unit strong enough. I've mentioned vise-grip pliers, C-clamps and other rigs already. You can put your strobe on it too, either on or off the camera, and use bounce light with freedom.

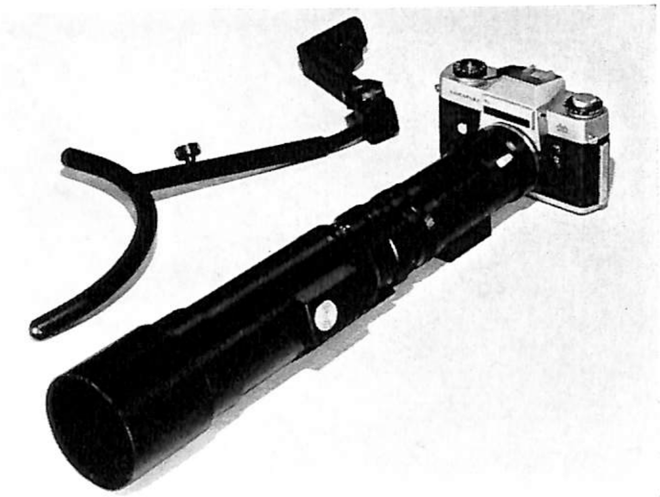
The closer to perfection any design comes, the longer it takes to improve it. The new Ball-and-Socket head (Cat. No. 14,168) was worth the wait!



Leitz handy table tripod and new head supports Leicaflex, Bellows and 100mm f4 Macro Elmar conveniently close to working surfaces for nature or scientific photography. Rigidity is all-important for long close-up exposures.

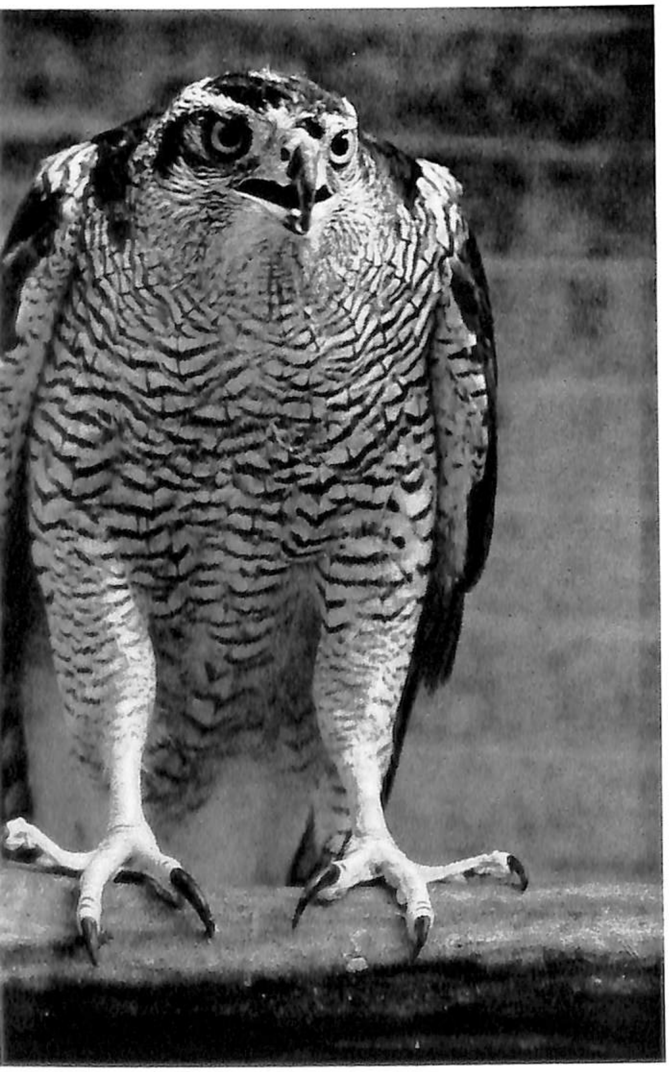
Ghostly pair of M-2's show alternative vertical camera positions permitted by new longer tripod head designs, adding to versatility of the Leitz table tripod.





The Hand-Held Telyt 400mm f/6.8 Lens: Some Surprises

Barrett Gallagher



Long lenses—400mm and up—have always been heavy to carry, hard to hand-hold and to focus and have suggested (not to say demanded) sturdy tripods, since any small movement is magnified in direct proportion to the image magnification. So, it is not surprising that long lenses have been used primarily in situations where it is not possible to get close enough to use a smaller, lighter lens—in sports, especially. What's more, once committed to a tripod it is harder for you to move the whole rig than to take a step or two with a hand-held camera.

As a result, the news that Leitz had introduced an f/6.8 400mm Telyt lens designed to be hand-held was widely broadcast by David Douglas Duncan when he used a prototype unit to cover the Republican and Democratic National Conventions in 1968. In his book *Self-Portrait: USA,* he describes the lens as being both sharp and easy to focus, and he gives it credit for providing him a real advantage in his picture coverage of the conventions. According to the photograph in the book showing him using the lens, the prototype was not equipped with the shoulder brace that is now furnished.

As soon as production models of these lenses became available, I secured one and found that it is indeed sharp, that it can be used hand-held at 1/125 of a second (or occasionally at 1/60 or even 1/30 if necessary). The "trombone" sliding focus is a great improvement over the traditional turning ring; the motion of hunting for sharp focus is easier, and there is a more direct relationship between the sliding focus motion and an approaching or receding subject.

Now came the problem of exploring the uses to which a 400mm lends itself. I knew it would "reach out," but a 200mm or even a 135mm lens also reaches out; all work at relatively far distances. Except for obvious things such as baseball game action, distant pictures were not spectacularly different with the 400mm than with the 200mm or 135mm.

I took the 400mm to the Bronx Zoo and found that I could bring the lions *really* close up—indeed, too close to include the whole family. What's more, my new lens brought the goshawk (always hard or nearly impossible to photograph because the bars of its cage are too close together to get a lens between them) up to full frame. And the owls more than filled the frame.

The depth of field is so shallow and the distance between the bars and the bird's perch was relatively so great that the bars were enough out of focus as to "dissolve" completely in the resulting pictures.

This shallow depth of field is a useful tool. It is shallowest at the closest range, which means that the isolation of the subject from its background is maximum. If it is possible to move further away from the subject, the background can be brought into varying degrees of soft focus. A penguin in a stark cement pen, photographed with the 400mm might have been standing on seamless paper.

The odd shape of cranes' necks and heads are startlingly emphasized against a soft background. A flower can be singled out against a blur of color suggesting more flowers. From further away, they are just a clump of flowers.

I emphasize distance as the controlling factor for, in hand-holding a 400mm lens, 1/125 is about the slowest speed indicated and you will seldom stop down beyond f/11 with medium speed films.

There is no reason not to use a tripod with relatively static subjects such as flowers; we found a monopod useful, but limiting. The goshawk and the owls were too high for our monopod.

A hand-held lens has many advantages—freedom of motion and speed of response to a moving subject especially. The 400mm Telyt f/6.8 can be hand-held, but it is a technique that takes skill, and even exercise! The first day in the Bronx Zoo, I spent three hours waiting for an uncooperative bird or animal to turn or move or open his eyes, or for several of them to get into meaningful relationship while bringing the scene into focus.

That night I discovered that this employed a muscle on the top of my left upper arm which had been neglected since my archery and bowling days. It was hard, hot, and it was sore. The obvious remedy was exercise. A daily half hour of practice, follow-focusing pedestrians on the sidewalk from the window, helped and, like Pancho Gonzales, I now carry and use a hand

exerciser to strengthen the forearm muscles that operate the focusing mechanism. I can now hand-hold the lens for a considerable time. I find also that I can hold it steadier than I could at the outset, and hunting for fine focus is almost effortless.

Not everyone will try to hand-hold the lens for three hours of course. Tripods or monopods are usable in many situations. And there are walls and fences to lean on. Wild life photographers work from blinds. The steadier the support, the better the chances for maximum sharpness, naturally.

I discovered that it took some time to develop the 'tunnel vision' way of seeing that a 400mm calls for. Your relationship to the subject is altered. You are getting tight close-ups of things relatively far away. Time, oddly enough, is compressed as well as distance. I was watching the *SS Oceanic* approaching our ferry boat; she was too far away to photograph, so I waited for a moment for an accompanying tug to get into a better position. But the *Oceanic* suddenly and rapidly began to fill the frame. Because all the image ratios are exaggerated in an unfamiliar way, it is hard to get several ingredients in a picture all in the optimum relationship. And for the same reason, nothing is ever the same twice. I have covered the same ground at the Bronx Zoo several times and each day's take is entirely different from the ones that came before it. I have had an extraordinary amount of fun working with this fascinating lens. The Telyt 400mm f/6.8 lens is an exacting and rewarding tool.

Focusing On

Photographs by Julius Behnke at Kodak Gallery

Julius Behnke, wild-life photographer par-excellence, who for many years has done special work in photography for Leitz in Wetzlar, Germany, was recently given a one-man show at the Kodak Gallery in New York City. On display were studies of wild flowers from a nature series Behnke, a flower fancier, has been working on for some time. They are the subject also of an illustrated article in a forthcoming issue of *Kodak International Photography.*

Harold Harvey

Harold Harvey, well-known member of the photographic community and inventor of Harvey's 777, the fine-grain developer, died in January at the age of 71. Both the Leica and Leitz microscopes played an important role in Mr. Harvey's early discoveries. His dramatic 36-inch enlargements from Leica negatives helped convince people of the validity of the miniature camera as a legitimate instrument for fine photography. The developer became available to the public in 1928. Engineer, inventor, chemist and electronics expert, Harvey was also a photographer who deeply understood the needs of the medium and a rare human being who will be missed by his many friends in the photographic field.

Nickel-Cadmium Battery Pack and Charger for Leicaflex Motor

Because of the popularity of the Leicaflex Motor, and the heavy duty demands placed on it by professionals, a nickel-cadmium battery pack and charger have been especially designed for it. The new pack extends the number of rolls that may be exposed, and the temperature range in which the motor may be used. It can transport forty to fifty 36-exposure rolls of film with a full charge of the pack at temperatures as low as 4 degrees below zero and as high as 140 degrees above.

Fast recharging greatly reduces "down time" of the equipment. The sealed housing contains ten 1.25-volt, soldered in series, size "AA", high-rate/fast-charge nickel cadmium cells supplying 12.5-volts. The new pack is interchangeable with the battery pack normally supplied.

Leitz "Short Courses"

Three-day Short Courses in Photography and Microscopy, open to the public at no cost, have recently been initiated by E. Leitz, Inc. Held at Universities throughout the country, the courses are designed to bring the working professional as well as the advanced amateur up-to-date on the latest application and use of equipment. The courses are being conducted by Walter Heun, the Photographic Department's well-known arbiter of technique, and by Dr. Manfred Nahmmacher, director of Leitz's Laboratory for Applied Microscopy. Topics covered range from Close-Up Photography without the Microscope and Photomicrography to the use of interchangeable lenses and their function ranging from Macrophotography through Telephotography, and include such subjects as black-and-white processing for maximum quality. The most recent session at Brandeis University in mid-June will be followed by a tentatively scheduled course at the University of Illinois in late September. The Washington-Baltimore area and the West Coast will be covered in the fall and winter. Announcements are sent to all Leica owners and subscribers to LEICA PHOTOGRAPHY within the area to be covered.

Manzer Courses

Helen C. Manzer, the well-known photographer, teacher and lecturer, will once again offer her courses in color photography during this summer and fall. Three West Coast courses are scheduled and will be held on California's Monterey Peninsula. They will take place May 30 to June 11, June 20 to July 2, and July 4 to July 16. Further information regarding these courses is available from Thomas J. Hardy, 771 Toyon Drive, Monterey, California 93940. The East Coast courses will be held at Weirs Beach in the lakes region of New Hampshire. The first course runs from August 1 to 13, the second from August 15 to 27. Two additional courses, centered around the fall foliage colors, will be held from September 26 to October 1, and from October 3 to 8. More information regarding the new Hampshire courses may be obtained from Ruth L. Wiesen, P.O. Box 553, Newport, Vermont 05855.

Attention: Owners of Older Leica Cameras

Wouldn't you like to own the latest Leica or Leicaflex? E. Leitz, Inc., and your franchised Leica Dealer are currently cooperating in accepting screw-mounted Leica-Camera bodies in trade against a new Leica or Leicaflex camera.

Won't you give him a call, or better still, visit him at your earliest convenience to determine what kind of trade you can make.

You may be surprised to find that it costs less to trade up to the latest Leica model than you thought.

The promotion ends in August, so don't delay!

From Infinity to the Microcosmos

Norman Rothschild

Mention of a bellows extension automatically brings to mind the subject of closeups. The new Leicaflex Focusing Bellows-R (Cat. No. 16,860) is fully capable of making these, but also quite a bit more. Mount on it the 100mm Macro-Elmar f/4 lens (Cat. No. 11,230) and you can tackle anything from a distant mountain to a portrait of a butterfly. With the 100mm Macro-Elmar the focusing range is continuous from infinity to 1:1 (life size) reproduction.

Add the Double Cable Release (Cat. No. 16,494) and you can maintain semiautomatic diaphragm operation for all Leicaflex lenses recommended for use on the Bellows-R. And, if you're interested in extremes, mounting a 50mm Summicron-R f/2 or 50mm Summilux-R f/1.4 lens on the Bellows-R will provide enlarged images in ratios up to 3:1, or three times life size! Even greater image magnifications are possible by adding the Leitz Leicaflex Extension rings, or by use of Elpro close-up lenses in combination with the Bellows-R. It is not, however, recommended that you use Leicaflex lenses shorter than 50mm on the Bellows-R.

There are other interesting features of the Bellows-R. One that is often overlooked by the prospective purchaser of an extension is the bellows' comparative massiveness and rigidity.

In closeup focusing, where relative distances become small and precise, it is necessary to have focusing and positioning mechanisms that do not wobble. For example, in adjusting f/stops, even the smallest movement of the lens standard could wreck a previously established point of correct focus. Wobble can also alter drastically the framing or composition of the image.

This can also happen if the focusing mechanism is not smooth. The Leitz Focusing Bellows-R is rigid and precisely machined, but despite its rugged construction, it is compact and light enough for easy portability.

The total extension of the Bellows-R is 142mm. On the left, next to the focusing track, is a rotating, rectangular bar. On this are listed magnification ratios for the 100mm Macro-Elmar f/4; 90mm Elmarit-R f/2.8; 135mm Elmarit-R f/2.8 plus a millimeter scale.

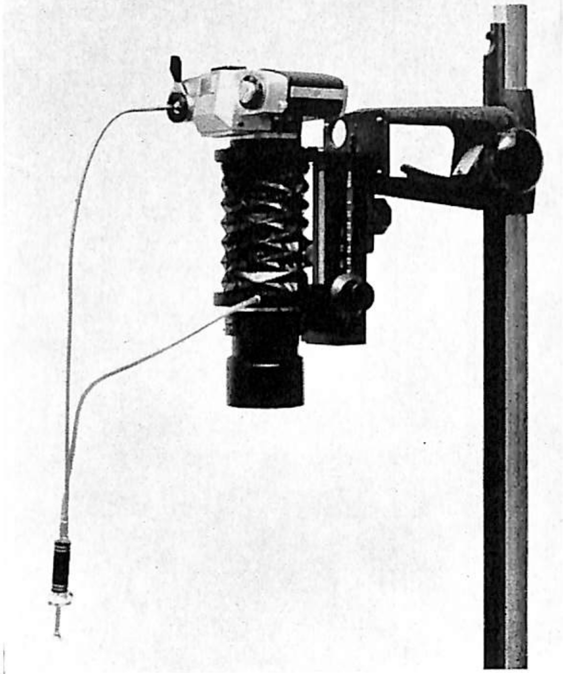
The latter is for use with the 50mm Summicron-R f/2 or Summilux-R f/1.4 or other Leitz lenses. This includes lenses from Leica M-series rangefinder cameras. These may be mounted on the Focusing Bellows-R via Lens Adapters (Cat. No. 14,127* or Cat. No. 14,167). With Leica M lenses, diaphragm operation is manual only, or preset in certain Leitz long lenses. The range of reproduction ratios marked on each scale are: For 90mm lenses, from 0.5 to 1.5, or from half life size to 50 percent greater than life size; for the 100mm Macro-Elmar f/4 it is from "0" (representing infinity) to 1 (life size).

For this lens the first gradation after "0" marked is 0.1 (1/10 life size).

The 135mm scale carries gradations from 0.31 (about 3/10 life size). Each scale carries enough in-between gradations to allow you to set precisely the magnification ratio you need.

You will notice that there are no exposure factors engraved on these scales. These are unnecessary when the Focusing Bellows-R is used with Leicaflex SL or SL/Mot. In these cameras the light is measured directly by the built-in, through-the-lens meter, which gives correct exposure, regardless of the amount of lens (bellows) extension used.

With the previous model Leicaflex, the external meter is blocked by the Bellows-R. In this case it's best to use



Leicaflex with Focusing Bellows-R and Macro Elmar may be mounted on Leica-Leicaflex Copying stand. Groove in copying arm, holds assembly rigidly in perfect vertical position. Copy stand has rapid and vernier vertical adjustment, large baseboard.

Leicaflex may be used in vertical or horizontal position, or in-between without altering position of setup.

a separate light meter. The exposure obtained this way is then multiplied by the appropriate exposure factor. (See chart on page 23.)

Exposure readings with the Leicaflex SL and SL/Mot. are made by the 'stopped-down' method, at the aperture to be used for making the exposure. The two pointers in the viewfinder are made to coincide in the usual manner; either by adjusting the lens opening (whenever a particular shutter speed must be maintained) or by changing the shutter speed whenever a specific f/stop must be used.

Either manual or semiautomatic diaphragm operation is possible when using the Focusing Bellows-R. Manual operation is adequate when the subject is illuminated brightly or magnifications are small, and the image on the focusing screen can be observed and focused easily at the aperture to be used for making the picture. Manual operation is also used when there is plenty of time to open the diaphragm for focusing and composing, and then close it to make the picture. It is also adequate whenever the subject is stationary, such as in copying and slide duplication.

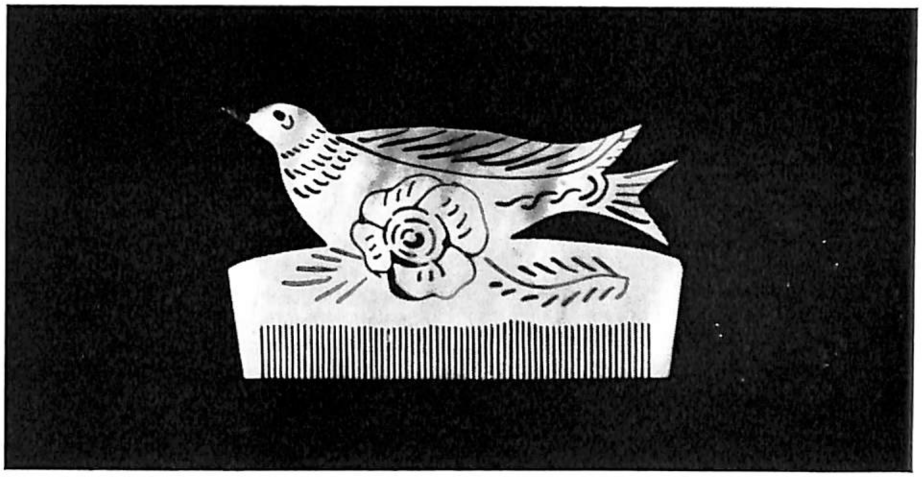
For animated subject matter, semiautomatic diaphragm operation via the Double Cable Release is preferable.

In any case, focusing and composing can at any time be done with the Leicaflex lens wide open. Let's see now just how the unique diaphragm operation of the Leicaflex Focusing Bellows-R works.

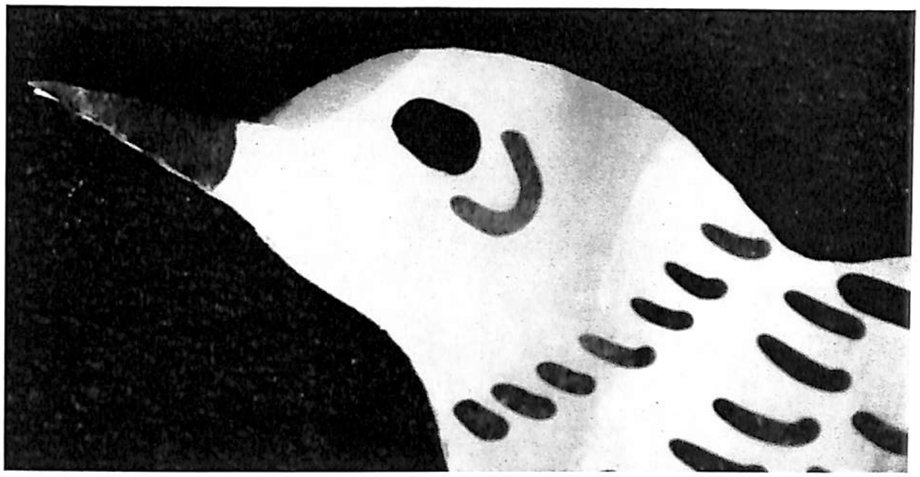
Let's start with manual operation. Around the focusing knob you will find a sliding ring. Pushing this toward the lens standard opens the diaphragm wide, regardless of the f/stop setting on the Leicaflex diaphragm ring. To keep the diaphragm open, push the sliding ring in, and while keeping it depressed, push down on the serrated lever just below the cable release socket on the lens standard.

To close the diaphragm, for exposure readings, depth of field observation or for making the final exposure, press in lightly on the sliding ring.

Now consider semiautomatic dia-

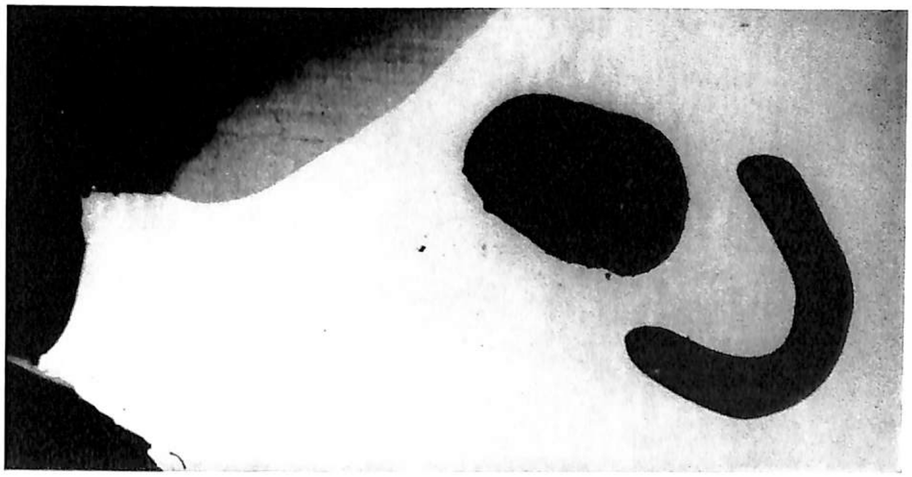


A comb, 3⅛ inches across was photographed with 50-mm Summicron-R f/2 at 20 inches.

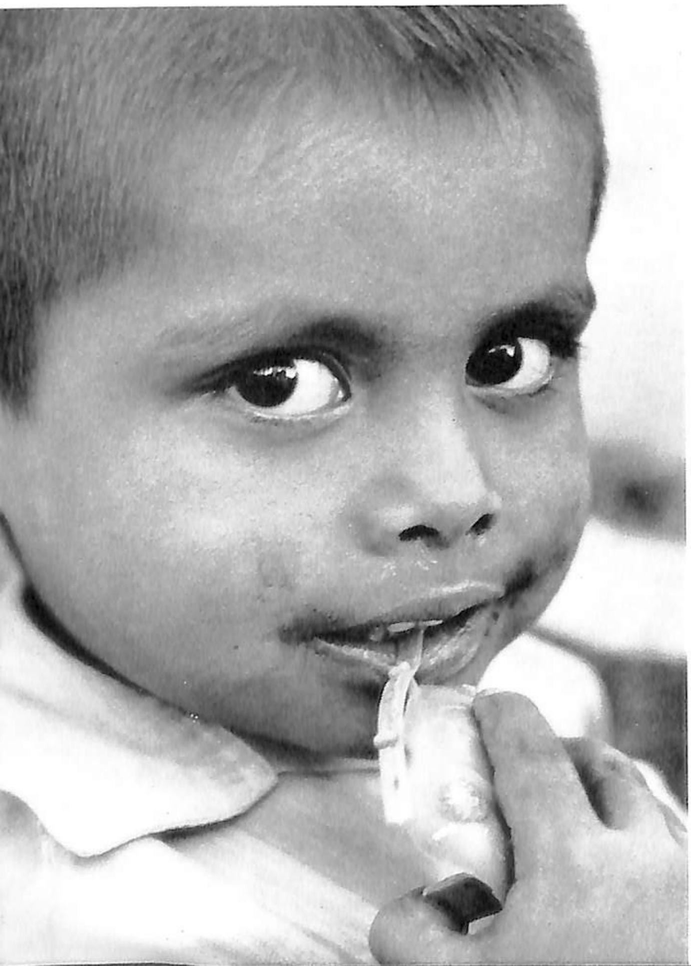


Life-size, 1:1 image of section was made with 100-mm Macro Elmar at full extension

Using the full Bellows-R extension and a 50-mm Summicron-R gave 3:1 image magnification.



A Leicaflex plus Bellows-R and the 100-mm Macro Elmar f/4 may be used for subjects as diverse as copying an old picture and taking of informal portraits, as in shot of boy.



phragm operation. The first step is to attach the Double Cable Release. Screw the cable that does *not* have an adjustment collar into the cable-release socket on the Bellows-R.

The cable with the adjustment collar should be screwed into the cable release socket atop the Leicaflex. The collar on this cable may be used to adjust the length of thrust of the cable release. If the thrust is too long, the shutter will finish its operation before the diaphragm will have had time to stop down.

To check on this, first open the back of the Leicaflex. Set the shutter-speed dial at 1/2000 second. Next set the diaphragm ring on the Leicaflex Auto-Aperture lens at its smallest opening. Cock the shutter, and open the diaphragm fully.

Next, point the lens to an evenly illuminated white surface. Depress the release plunger of the double cable release, while looking through the back of the camera. If all goes well, you should see the smallest opening of the lens.

If this is not the case, the plunger in the adjustable cable release must be shortened. Once the adjustment has been made, pressure on the plunger of the Double Cable Release will close the diaphragm and release the Leicaflex shutter in rapid sequence.

You will notice that on the Double Cable Release there is a set-screw on the collar surrounding the plunger. This is used to lock the shutter of the Leicaflex open for exposures longer than one second.

To do this, first set the Leicaflex shutter at "B". The plunger is then depressed, held in place and the set-screw actuated. The plunger is then released, and at the end of the exposure, the set-screw is loosened.

Just a word now about the 100mm Macro-Elmar f/4. This lens does not have its own focusing mount, hence it must be used on the Focusing Bellows-R. One look at the focusing screen of the Leicaflex will show an image that is brilliant, flare-free and crisp. The point of sharpest focus is therefore easily recognized.

The Macro-Elmar is specially corrected for the kind of work that will be often done with it—closeups. In addition to superb correction for color and other abberations, the Macro-Elmar has an especially flat field. This will be particularly appreciated by those doing copying or slide duplication, or other work involving flat surfaces parallel to the film plane. The Macro-Elmar will render these sharp from corner to corner, even at the full f/4 aperture. Naturally, in addition to performing superbly in closeups, the Macro-Elmar also works excellently at all other distances.

At this point, I'd like to take up some practical closeup considerations. The first is that of measuring the exposure. Here, the selective area reading of the Leicaflex will be appreciated. By centering the most important portion of the tiny subject in the central microprism area of the Leicaflex SL or SL/Mot. focusing screen, the reading of extraneous subject matter can be eliminated. This can help assure correct exposure for the most important subject portions. This is especially valuable with narrow-latitude color films. At long extensions, high image magnifications or when the lens is stopped down, the central microprism screen darkens somewhat. *But this will not in any way affect exposure readings*, since the photocell of the Leicaflex SL or SL/Mot. is not located in the eye-level prism. Readings may therefore be taken in the usual manner.

However, at long extensions and with dark subject matter, exposure readings may be difficult. An aid here, is to place a piece of white paper (the white side of a Kodak Neutral Test Card for example) in front of the subject, and take a reading of this. The reading obtained this way must be multiplied by five for correct exposure. Thus, if with the white card in place, the reading you obtain is 1/125 at a marked f/22 you may change the shutter speed about to 1/25 second by placing the shutter speed mark close to and just below the 1/30 setting. Or you may leave the shutter speed set at 1/125 and place the aperture at a setting between f/8 and f/11. It should be noted that when copying line matter, such as printed matter, ink drawings, etc. on high contrast black and white film, intended for special high-contrast development, the white-card method of exposure readings is also used. *But in this case, the exposure reading taken from the white card is used to make the exposure without any adjustment.* When copying continuous-tone matter, such as paintings or photographs, readings may be taken directly from the subject, or from the gray side of a Kodak Neutral Test card. *Important Note: The Kodak Neutral Test Card is not supplied by E. Leitz, Inc. Your photo dealer can obtain this from the Eastman Kodak Co.* for you.

Before discussing some important Leitz accessories, let me remind you of two important features of the Focusing Bellows-R, heretofore unmentioned. One of these is the lower focusing rack. This permits sliding the entire camera-lens-bellows assembly closer to or further away from the subject, without disturbing or moving a tripod and without changing image magnification (reproduction ratio).

To proceed, the setting mark, next to the focusing knob (extension adjustment knob) is set opposite the magnification desired on the rotating scale. The camera-lens-bellows assembly is then placed at approximately the correct object-to-film distance. The knob for the lower focusing rack is then operated and the camera moved forward or backward gently, till the image on the focusing screen is sharpest.

The other feature of the bellows is its ability to make vertical or horizontal pictures, without your having to turn the camera-bellows-lens assembly on its side. To switch from one format to the other, you simply press down on the lever provided for this purpose at the rear left of the Bellows-R. Positions intermediate to vertical or horizontal can also be utilized.

An item of especial interest to Leicaflex owners using the Focusing Bellows-R for copying or slide duplication is the Leica-Leicaflex Copying Stand (Cat. No. 16,707). A groove on its carrying arm accepts the lower portion of the Bellows-R, holding the entire assembly absolutely parallel to the baseboard.

Other accessories of interest are: the Framing Box (Cat. No. 16,761), useful for copying books or other objects up to five inches thick and 11⅝ x 16⅝ inches in size—these are held flat by a glass plate; the Illuminating Box (Cat. No. 16,773), for transilluminating objects up to 16 x 17½ inches in size and Small Object Stage (Cat. No. 16,786).

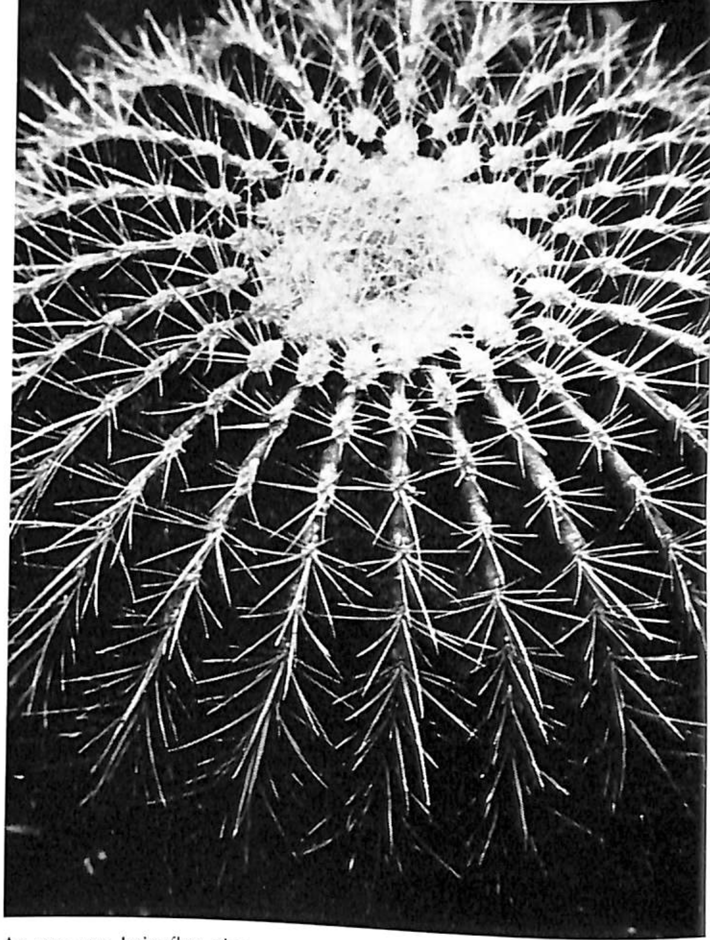
The latter is useful when copying 35mm color transparencies in 2 x 2 inch slide mounts, or when photographing other small objects in 1:1 size or larger. It has a vernier adjustment that permits raising and lowering the object through very small, precise distances to obtain sharpest focus.

It takes a lot longer to read all about the Leicaflex Focusing Bellows-R, than to attach it to your Leicaflex and put it into operation. And, the moment you've made the setup, the wonderful "feel" of the equipment, the knowledge that you're prepared to solve any photographic problem have you raring to go.

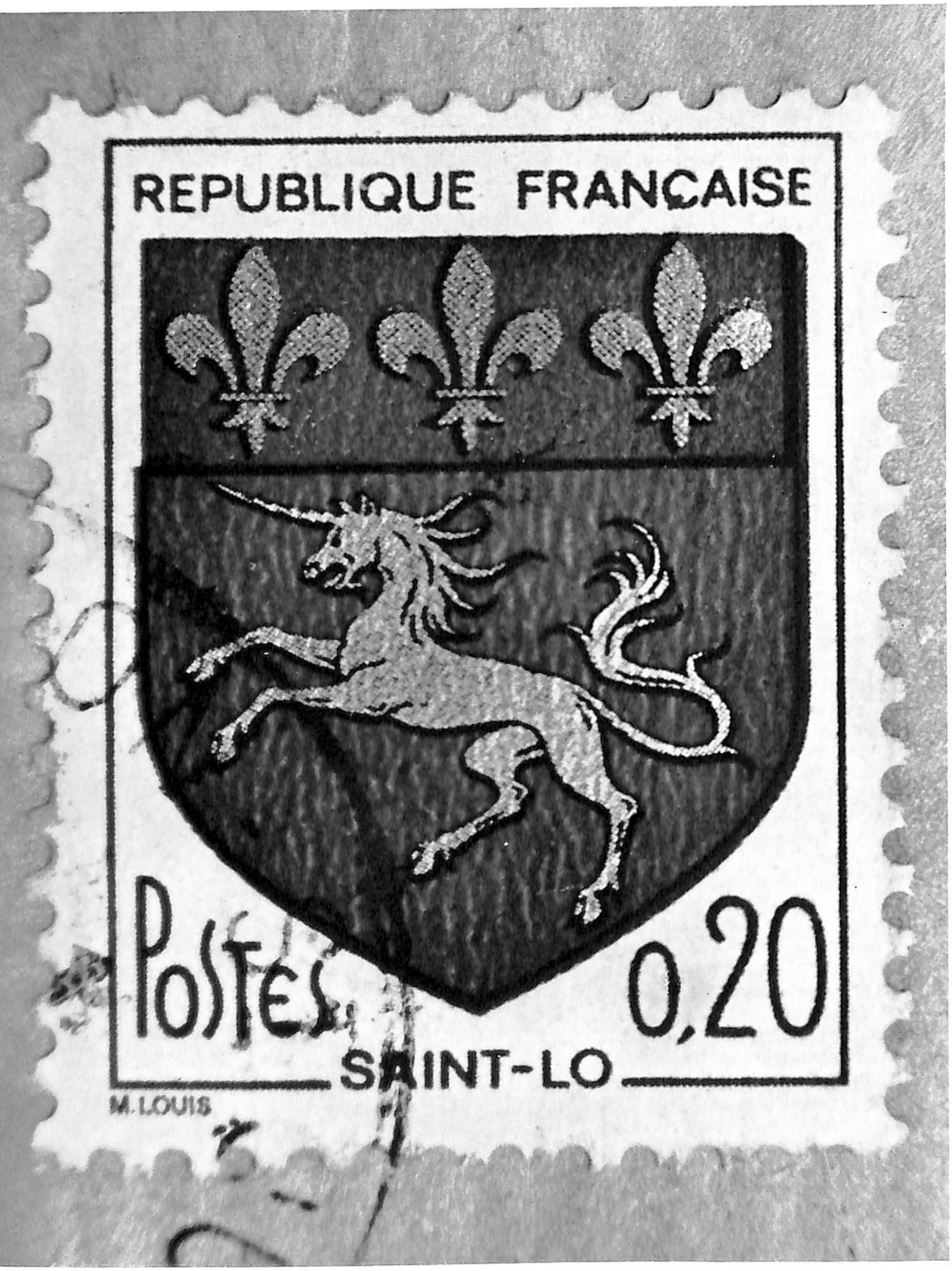
If you're a physician or a dentist your subject matter is, of course, cut out for you. Really sharp closeups, for historical or diagnostic purposes of lesions, teeth, prosthetic appliances, gross specimens and the like, become simple to photograph. And you will especially appreciate the automatic diaphragm operation feature of the Bellows-R when photographing living subject matter.

The industrial photographer will appreciate the ability of the combination of Leicaflex, Bellows-R and 100mm Macro-Elmar to go places where using a heavier and bulkier camera is out of the question. The optical performance of the Macro-Elmar will help make industrial and commercial shots that rival in sharpness those made with larger cameras.

In the scientific laboratory, the Leicaflex and the Bellows-R plus Macro-Elmar are right at home with precision lab equipment. Special photographic and photomicrographic problems, that can be solved via the Leicaflex are the province of the Leica



As you use Leicaflex closeup capabilities new subjects will suggest themselves. A cactus makes an interesting pattern, while stone wall reveals an interesting lifelike detail



The original negative for this picture of a French postage stamp, was made at 1:1 image magnification. As shown on this page, the final magnification is about six diameters. This speaks well for the 100-mm Macro Elmar.

Technical Division. Questions about any special optics or other equipment, that may be found useful in connection with Leicas and Leicaflexes will be answered by contacting Leitz.

To the adventurous amateur, a whole world of fun lies between infinity and the ultra closeup. For example, copying of slides at 1:1 magnification is fun for the non-pro. For the rest of us, this capability may be an absolute necessity. The flat field of the Macro-Elmar will assure sharp slide copies from corner to corner. During slide copying, you can of course introduce corrections, such as lightening or darkening slides and changing the color balance with filters.

And you need not be satisfied with same-size slide copies. With a maximum 3:1 magnification possible, when you use a 50mm Leicaflex lens, you can easily crop out unimportant details.

Naturally, the hobbyist will want to try his hand at formal portraits and the focal length of the 100mm Macro-Elmar is ideal for this. My mentioning hobbyist does not, of course, exclude the professional wishing to make a series of portraits in rapid succession and in a relaxed manner. Mount the Bellows-R and Macro-Elmar on a Leicaflex Mot, and you can make an all-encompassing sequence of rapidly changing expressions on your model's face! Would it be anticlimatic to mention something as staid as flower photography at this point? I think not. Its great popularity speaks for its validity as an important branch of the medium. For the naturalist, shots of blossoms, leaves, buds and other pictures of the plant in various stages of growth, can prove invaluable aids in research and record keeping. For the lover of the artistic, flowers are an everlasting source of beauty, especially in color pictures. Experiment here with depth of field. Making some pictures with overall sharpness and others in which the background or foreground is completely blurred, is one avenue of experimentation.

In combination with the Leitz Copying Stand (Cat. No. 16,707), the copying of photographs, etchings, water colors, documents, stamps and the photography of small objects, becomes something to enjoy instead of a chore. The rugged, precise construction of the stand assures good parallelity between film, lens and the original copy plus vibration-free operation.

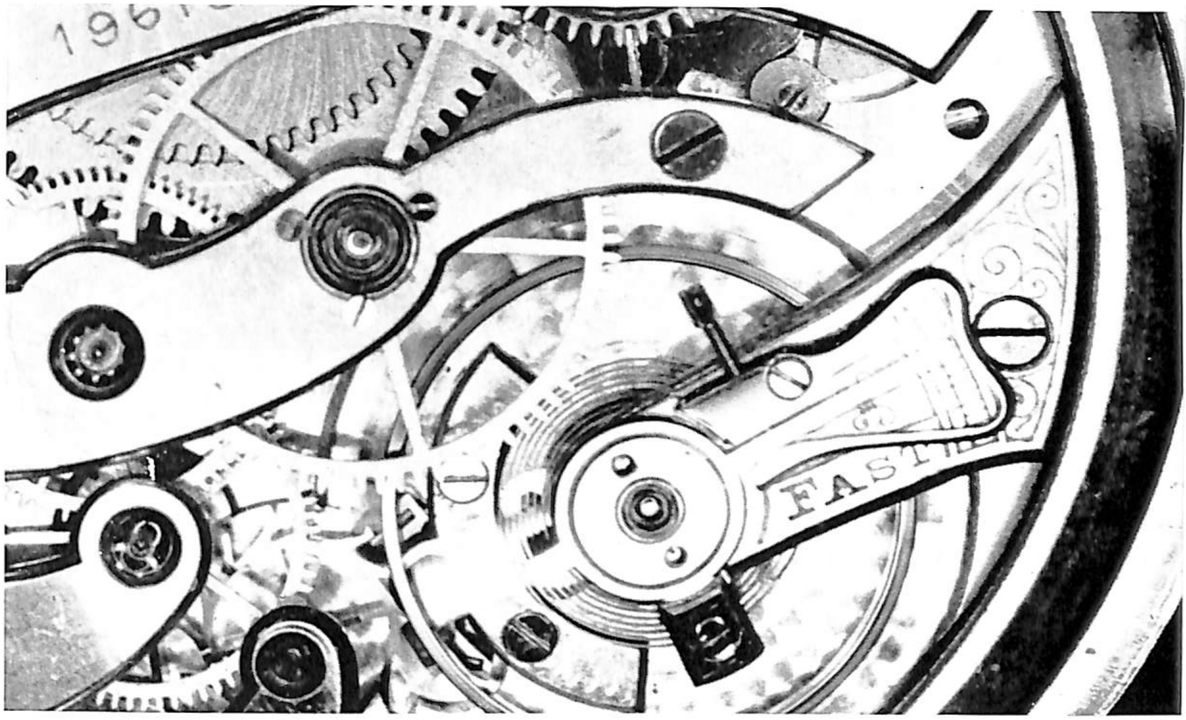
Parallelity assures distortion-free copies that are sharp from corner to corner. The baseboard of the Leitz Copying Stand accepts original subject matter up to about 14 x 19 inches.

For field work with the Leicaflex plus Bellows-R and Macro-Elmar you'll want to assure the utmost in sharpness by utilizing a sturdy tripod. And when you do, investigate the use of the Leitz Large Ball-and-Socket Tripod Head (Cat. No. 14,168). It can be of inestimable help in securing just the right camera angle in closeup work while holding camera, lens and bellows assembly rock-steady.

But all work need not be done from a tripod. With fast film, a steady hand, bright light and the use of the double cable release, you can use your setup hand-held to track down insects, butterflies and other living creatures. One 'secret' in hand-held work is to screw a Leitz Table Tripod (Cat. No. 14,100) into the tripod socket of the Bellows-R, using it in the folded position as a pistol grip. If you interpose the Large Ball-and-Socket Head, this can prove useful in getting a comfortable working position of Leicaflex/Bellows-R/Macro-Elmar setup vis-a-vis your head and body. If you add a small electronic flash unit, and work out flash exposure before venturing out on an important assignment, you'll find it possible to make sharp, movement-free exposures from the hand-held stance, due to the short duration of the electronic flash. The ability of the Leicaflex shutter to synch electronic flash at 1/100 second will be found helpful in controlling the effect of ambient light both indoors and out.

I have painted what may seem to be a very large picture of the capabilities of the Leicaflex/Bellows-R/Macro-Elmar combination. But as you get to use it, I am sure you will find many uses I have not mentioned, and work out your own unique way of utilizing this fine equipment.

The Leicaflex plus Leicaflex precision closeup equipment is right at home with other precision devices found in the scientific or medical laboratory. Small objects are revealed in all their hard-edged reality by Leicaflex optics.



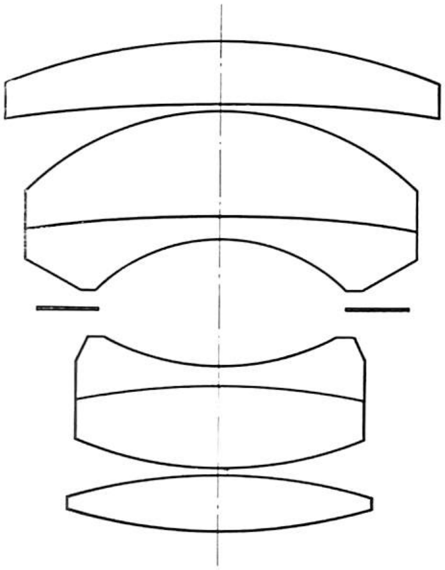
Reduction Scales/Object Sizes

Reproduction scales obtainable and object sizes of the focusing Bellows-R with the various interchangeable LEICAFLEX® lenses. Further possibilities are opened by the use of the ELPRO-close-up attachments and 1:1 ring combination.

Lens	Distance scale in m	Reproduction scale (decimal)	Object-film distance in mm	Object size in mm	Extension factor for LEICAFLEX with external measurement
SUMMICRON®-R 1:2/50mm Pupillary magnification 1.12	∞	0,81	204	29,6 x 44,4	3,0
	∞	2,74	259	8,8 x 13,1	11,9
	0,5	2,87	265	8,4 x 12,5	12,7
ELMARIT®-R 1:2,8/90mm Pupillary magnification 0.91	∞	0,47	398	51,1 x 76,6	2,3
	∞	0,50	388	48,0 x 72,0	2,4
	∞	1,50	358	16,0 x 24,0	7.0
	∞	1,58	362	15,2 x 22,8	7,5
	0,7	1,75	372	13,7 x 20,6	8,6
MACRO-ELMAR® 1:4/100mm Pupillary magnification 1.06	∞	—	∞	∞	—
	∞	1,00	403	24,0 x 36,0	3,8
ELMARIT-R 1:2,8/135mm Pupillary magnification 0.63	∞	0,31	767	77,4 x 116,1	2,2
	∞	0,35	723	68,6 x 102,9	2,4
	∞	1,05	560	22,9 x 34,3	7,1
	1,5	1,16	563	20,7 x 31,0	8,0
ELMARIT-R 1:2,8/180mm Pupillary magnification 0.52	∞	0,23	1192	104,3 x 156,5	2,1
	∞	0,79	750	30,4 x 45,6	6,4
	1,8	0,92	741	26,1 x 39,1	7,8

The aspherical surfaces cannot be identified from this diagram because of the fineness of the deviation involved.

Precise information as to the number and location of the aspherical surfaces, and data regarding the newly developed Leitz optical glasses, cannot be released until the culmination of presently pending patent proceedings.



Why the Noctilux?

by Frank D. Grande

A Special Lens for Available Light

Professor Grande teaches at the City College of New York. He has recently completed (together with Simon Nathan, an editor of Popular Photography magazine) a book on THE LEICAFLEX SYSTEM OF PHOTOGRAPHY to be published by Amphoto in October. Ed.

Prof. Ernst Abbe of Jena (1840-1905) demonstrated, mathematically, that it's impossible to design a perfect lens. More specifically, his point was that a lens that is fast enough to use in the lowest level of light at which we can see and that can accurately reproduce in a single plane every tone, line, and point in a scene, right down to an infinitesimally small point at any distance on which the lens is focused, is not only practically, but theoretically, impossible. Even if scientists could agree on the nature of light (which has been variously explained by the corpuscular theory (Newton), the wave theory (Huygens), the electromagnetic field theory (Maxwell), and the quantum theory (Planck) the problem would still remain: how can one aberration of a lens be minimized without accentuating another? Or, as an engineer at the Leitz factory in Wetzlar has put it: a lens designer is like a man trying to tiptoe through a cage full of hungry lions without getting bitten.

How well Leitz has succeeded in overcoming the obstacles to good design can be seen in the wide acceptance of the 50mm Summicron f/2 as the standard by which lenses for 35mm photography are judged—and the closeness to which this standard has been matched by the other 50mm lenses for the Leica and the Leicaflex. So, the question inevitably arises: under what circumstances would a Noctilux be truly advantageous?

First of all, this is a special lens for available-light photography at high apertures with fast films. If a maximum aperture of f/2 is fast enough for you, then a Summicron is your best bet. If you sometimes need an additional f/stop, the Summilux can handle this superbly. But if you're persistently trying to record images under extremes of darkness, then the Noctilux may be the choice for you. Its advantages will become apparent if your pictures often call for: use of an aperture of f/1.2 or f/1.4, inclusion of actual light sources or strong highlights in the picture, use of high speed film.

These conditions may occur in a variety of situations: spectator events (such as the circus or stage plays), candid portraits in rooms where you cannot control the direction and intensity of illumination, and outdoor scenes at night in which the headlights of cars or building lights are shining into the lens—especially near the edges of the lens.

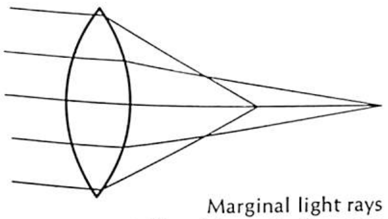
To appreciate the achievement involved in producing the Noctilux, you must first understand the optical problems created by these conditions and how the design parameters of the Noctilux have been optimized for dealing with them.

Basically, three problems come to

the fore under these circumstances: spherical aberration, coma, and flare.

Spherical aberration. The varying thickness of a lens results in unequal magnification over the entire surface. As a result, peripheral rays (those entering the outer edge of the lens) cannot be brought to focus in the same plane as axial rays (those passing through the center).

Fig 1. Spherical Aberration



Marginal light rays will not focus in the same plane as rays passing through the center

Coma. This is a lateral variation of spherical aberration. The image from a point that is not on the axis of a lens is imaged as a comet-shaped blur. Since the light is generally concentrated in the "tail" of this comet, the effect can be quite distracting in a big enlargement.

Fig 2. Coma

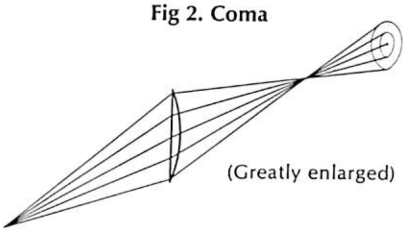
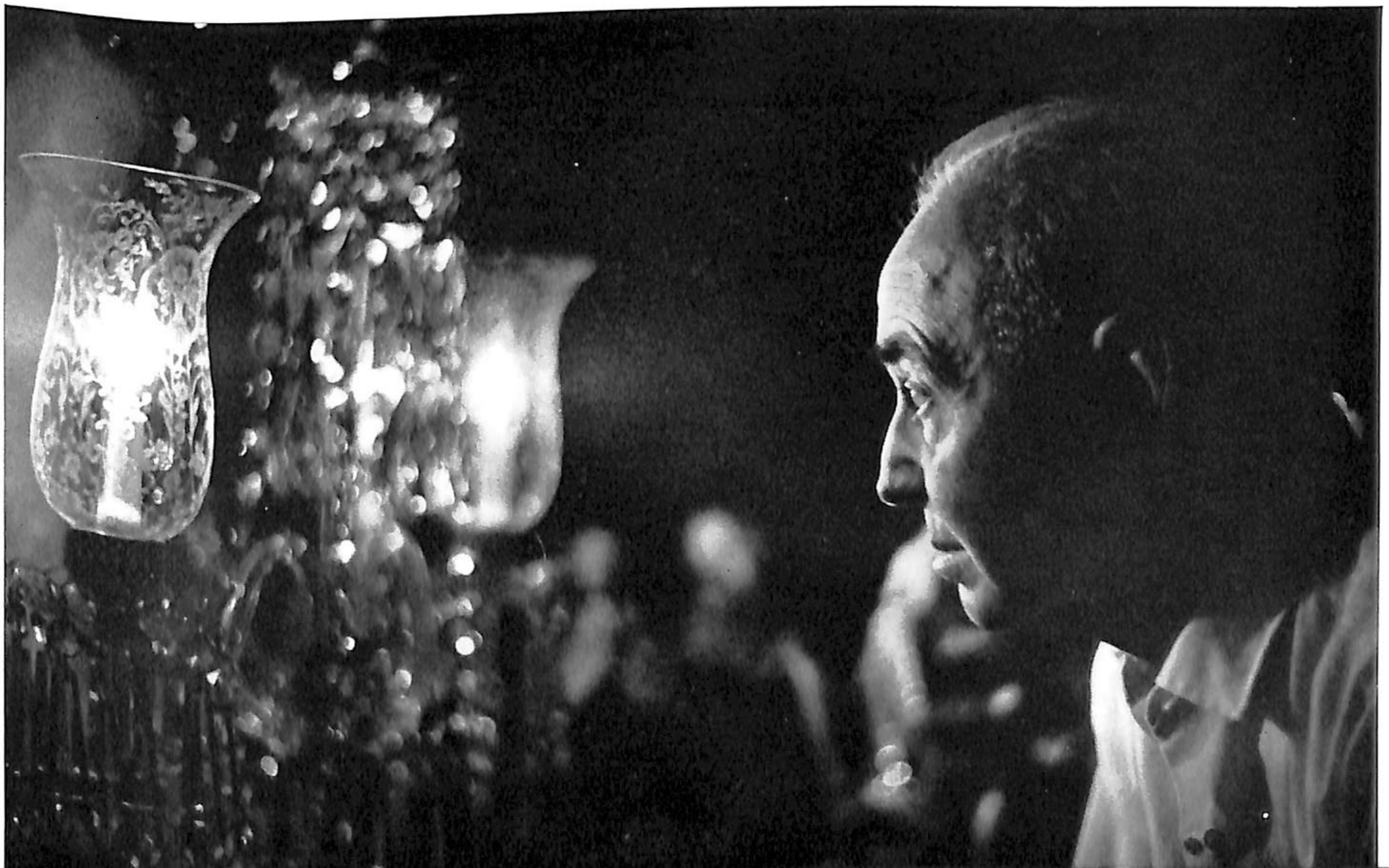


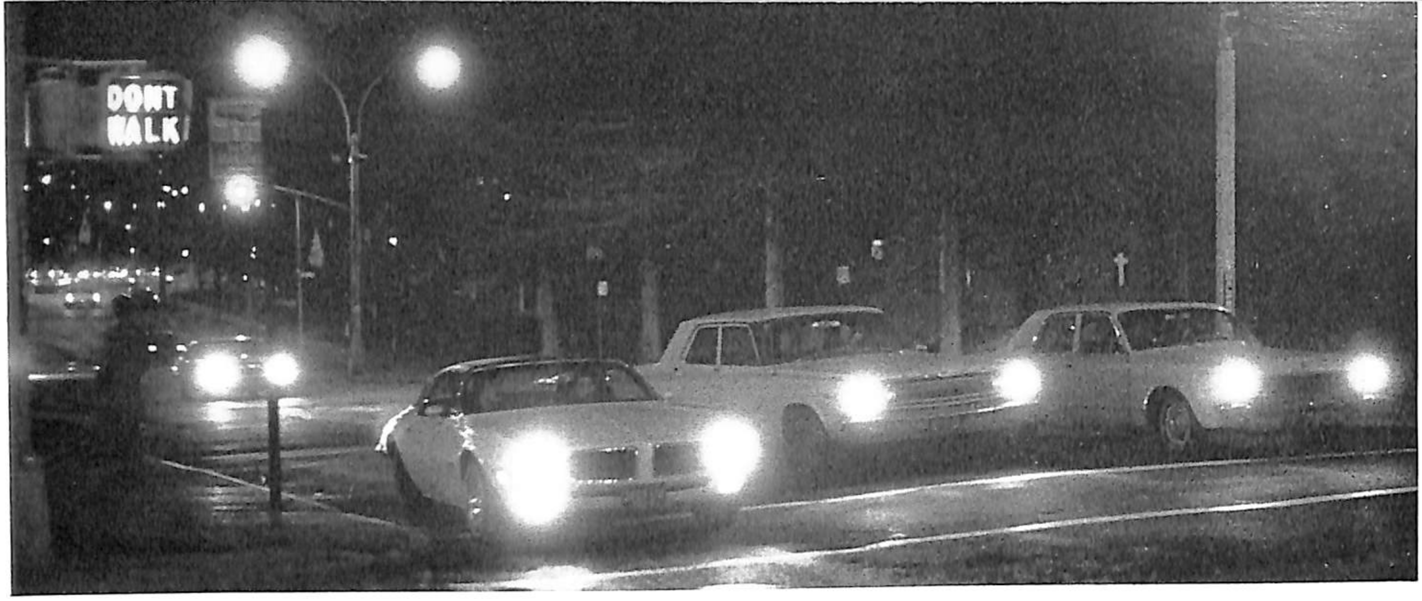
Image point is in the form of a coma

Flare. This is caused by light that has entered the lens bouncing back and forth between the surface of the elements. Light entering the lens near the edge causes the greatest amount of flare.

All of these problems, which result in a loss of sharpness, can be minimized in a number of ways. For example, flare can be greatly reduced by using special glass with a high refractive index (that is, low dispersion) and coating all the surfaces of the lens elements not cemented to other elements. Spherical aberration and coma can be reduced by combining different lens elements—for example, a positive lens (which brings peripheral rays to focus in front of axial rays) and a negative lens (which brings peripheral rays to focus in back of axial rays).

But the Noctilux employs a rarely used solution—two aspheric surfaces. A lens with a non-spherical surface, such as a section of an ellipsoid or a parabola, can more readily bring all the rays to focus in the same plane and reproduce points of light without coma. The use of aspheric surfaces also enabled Leitz to design the lens with only six elements—fewer than in any other f/1.2 lens. This, in turn, helps reduce flare. While aspheric lenses have long been produced for special astronomical telescopes, such lenses have been ground and polished individually by hand. But that would





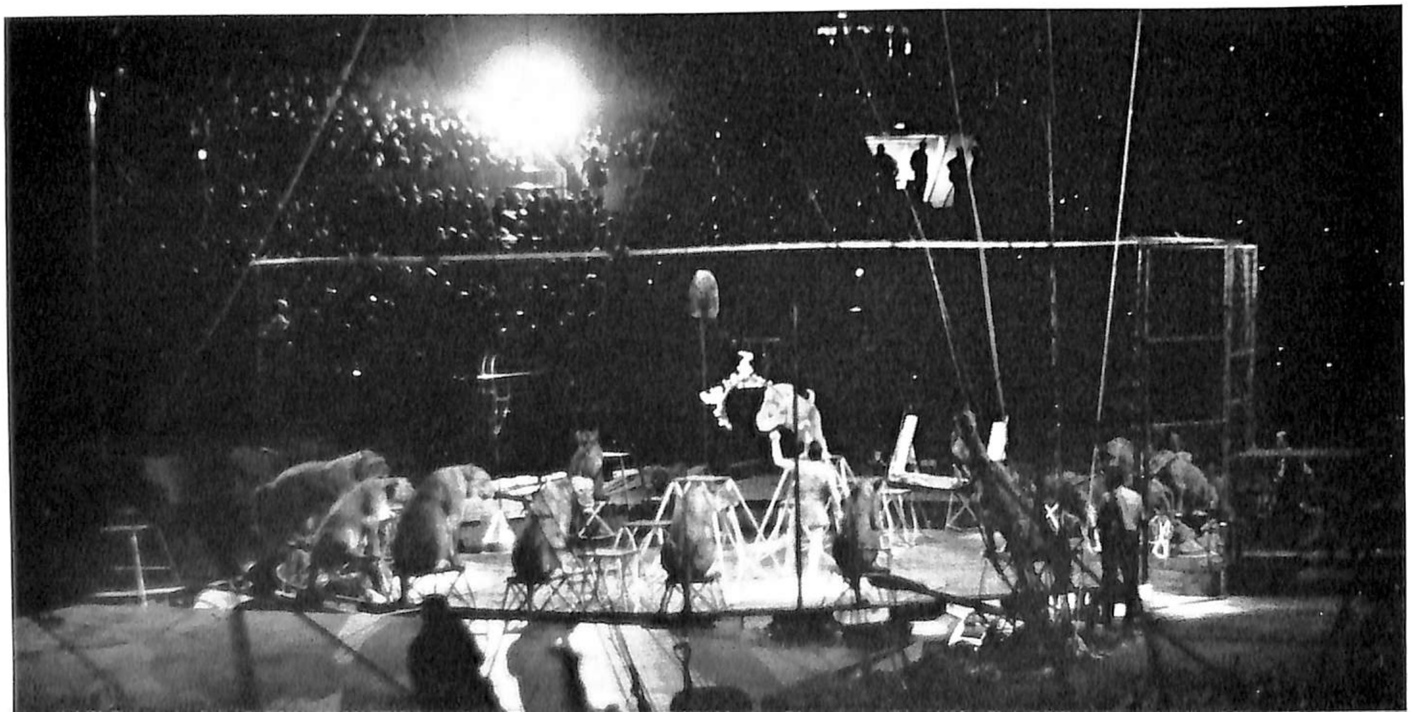
be impractical, as well as prohibitive in cost, for a camera lens produced in series. So Leitz first had to design special machinery to grind and polish the non-spherical surfaces accurately. That's why the Noctilux, which is the first lens ever produced for a still camera to incorporate such elements, costs much more than other lenses of the same focal length. Finally, Leitz also developed new glasses with a higher index of refraction than ever before to complement the aspheric elements in minimizing spherical aberration and coma and producing maximum brilliance under the difficult conditions mentioned above.

To test the Noctilux under actual working conditions, I took a variety of pictures in which the light sources were included—often at the edge of the field of view. I hand-held my M4, loaded with Tri-X film, and used apertures of f/1.2 and f/1.4. In the portrait showing my father next to an ornate crystal lamp I was pleased to see not only the careful confinement of the halos, but also the excellent contrast and gradation of tones surrounding the highlights.

For the pictures of traffic headlights at night, I had to push a roll of Tri-X to 1000 ASA in order to obtain shutter speeds of 1/30 to 1/50 sec. But in some respects, the circus photographs provided the most difficult test. Again, using a normal ASA of 400, I exposed for the performers, thus allowing the spot lights in the background to be overexposed. Yet, the halos surrounding these lights have been sharply confined. The small points of light, sometimes streaked, are penlight "sparklers" being rapidly rotated by the audience. The motion streaks were caused by the relatively slow shutter speeds I had to use. The great distance from my seat to the performers accounts for the fairly large depth of field obtained at maximum aperture.

Now I'm trying the Noctilux for color photography. The virtual elimination of any internal reflections in the lens insures the best possible saturation of colors. With the lens wide open, it is possible to produce startling results with portraits in such places as restaurants or discotheques. And I can hardly wait for the start of the ballet season.

So, if "available darkness" pictures are your forte, then the Noctilux may be for you.



The grown-up camera

This is the camera you don't have to "baby".

The M-4 is a rugged precision instrument. Its compact, all metal body houses a built-in ultra-bright view-rangefinder with a base longer than that of any other 35mm camera, for super accurate focusing with coupled lenses from 21 to 135mm. The illuminated frames for the 35-50-90 and 135mm lenses are automatically engaged and parallax corrected. The quiet, efficient focal plane shutter has eleven precision speeds from 1 to 1/1000 of a second. Its accuracy far exceeds the ASA standard. For instance, at 1/125 of a second, the Leitz tolerance is ± 10% . . the ASA standard ± 25%. No other 35mm camera loads so quickly or so easily. The M-4 represents a combination of rugged reliability, unmatched quality, and proven precision...made possible through rigid production controls and uncompromising optical and mechanical tolerances. For example, if the flange-to-film distance is increased by as much as the thickness of a human hair, the error would be greater by as much as ten times the tolerances acceptable to Leitz.

Leica M-4 by LEITZ, the world's foremost microscope manufacturer since 1849. Top-rated by the serious photographer.

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